

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group II (claims 2 and 3) reply filed on 2/01/2010 is acknowledged. The traversal is on the ground(s) that the claims are connected in at least one of design, operation, or effect and, equally important, no substantial burden would be imposed upon the Examiner if he were to examine all of the claims at this time. Applicant does not concede that any prior art found to be relevant with respect to one group of claims is also relevant to any of the other groups of claims but, rather, submits that a sufficient relationship exists that examination of all the claims can proceed at this time. This is not found persuasive because as mentioned in the Restriction Requirement mailed out on 12/24/2009, this application contains inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT rule 13.1. The technical feature of inventions I, II, III, IV, and V is "a particle containing at least one cavity". This said technical feature is taught by Ito et al. (US 6,777,069) which disclose a transparent film-coated substrate wherein the transparent coating film comprises inorganic compound particles comprising a shell, and a porous matter or a cavity enclosed therein, wherein the porous matter or the cavity remains unchanged in the formed transparent coating film (Abstract). Therefore, "a particle containing at least one cavity" is not a special technical feature and therefore claims 1-6 and 10-22 fails to form a single general inventive concept. Therefore, unity of invention is lacking and restriction is proper.

2. Claims 1, 4-6, and 10-22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 2/01/2010.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 2 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by FAN (EP 0393676).

Regarding Claim 2, FAN discloses a method for accurately fabricating an integral three-dimensional object from successive layers of a photohardenable liquid composition comprising the steps of:

- a) forming a layer of a photohardenable liquid (Page 3, line 39);
- b) photohardening at least a portion of the layer of photohardenable liquid by exposure to actinic radiation (Page 3, lines 40-41);
- c) introducing a new layer of photohardenable liquid onto the layer previously exposed to actinic radiation (applying a layer of particles onto a target surface) (Page 3, lines 42-43);

- d) photohardening at least a portion of the new liquid layer by exposure to actinic radiation, wherein the actinic radiation is the form of a beam of energy (Page 4, lines 26-39) (irradiating a selected part of the layer that corresponds to a cross-section of the object with a beam of energy), with the requirement that the photohardenable composition comprises an ethylenically unsaturated monomer, a photoinitiator, and radiation deflecting matter, the deflecting matter being in the form of hollow spheres (particles are used in the layer composition that contain at least one cavity) acting as a thermal insulator and having a first index of refraction (Page 3, lines 44-49), the said hollow sphere particles in the selected part will inherently become connected to each other due to the photohardening of the part by the actinic radiation; and
- e) successively repeating steps (c) and (d) until the three dimensional object is complete (repeating the steps of application and irradiation with a beam such that the connected parts of adjacent layers connect to each other to form the object) (Page 3, line 50).

Regarding Claim 3, FAN discloses that said hollow spheres (particles with cavities) provide adequate heat capacity to dissipate the excessive heat of photohardening, but still provide thermal insulation to increase the photospeed (Page 8, lines 43-45). These effects are illustrated in Examples 2, 3A to 3C, 4A, and 4B FAN wherein the said hollow spheres are undistorted and uniform (Page 8, line 47). Therefore, FAN teaches that the said hollow spheres (particles) are irradiated such that the cavities are essentially preserved.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stella Yi whose telephone number is 571-270-5123. The examiner can normally be reached on Monday - Thursday from 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Jeff Wollschlager/
Primary Examiner, Art Unit 1791

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